

**ABSTRACT**

**[0040]** A method of epoxidizing an unsaturated compound having a carbon-to-carbon double bond to form an oxirane ring across the double bond comprising adding to said unsaturated compound an oxidizing agent selected from hydrogen peroxide, acetaldehyde monoperacetate, an organic hydroperoxide, or a combination thereof, to form a reactant mixture; and forming the reactant mixture in a film against a wall of the thin-film reactor that is at a temperature sufficient for reaction of the oxidizing agent with the unsaturated compound to form an oxirane ring across a double bond of the unsaturated compound.